REMARKS

Claims 1-7 were examined and reported in the Office Action. Claims 1-7 are rejected. Claim 1 is amended. Claims 1-7 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. § 103(a)

A. It is asserted in the Office Action that claims 1-7 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over U. S. Patent No. 4,996,573 issued to Hack et al. ("Hack").

According to MPEP §2142

> [t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). *"All words in a claim must be considered* in judging the patentability of that claim against the prior art." (In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Applicant's amended claim 1 contains the limitation of

> [a] vertical structure thin film transistor comprising a stacked structure of a substrate; a first electrode; a dielectric thin film; a second electrode only made of metal and divided into a plurality of electrode portions, each electrode portion only made of metal; a semiconductor thin film; and a third electrode, wherein current directly flows from the second electrode to the third electrode perpendicularly to the substrate and is modulated by an electric field generated from the first electrode parallel to the current.

Hack discloses a thin film transistor having electrode fingers that include metal stripe 20, semiconductor stripes 18 and barrier side walls 22. (Hack, Figs. 1 and 3). A Schottky barrier between metal stripes 20 and a semiconductor charge transport layer prevents current from flowing directly between the metal stripes 20 and a drain electrode 26. (Hack, column 4, lines 23-27). That is, Hack discloses that current cannot directly flow from the second electrode to the third electrode. This teaches away from Applicant's claimed invention. Further, referring to Fig. 1 of Hack, when the gate electrode potential is switched to the ON state, current flows through the channel portion 30. Namely, current flows initially in a lateral direction, and then vertically to the drain electrode 26. Therefore, current flow direction does not completely coincide with the direction of the electric field (column 4, lines 28-37). Thus, total current intensity is limited.

On the contrary, in Applicant's claimed invention, current flows directly from the second electrode to the third electrode and total current flow direction is parallel to the electric field. Moreover, the second electrode is divided into several electrode portions, which are separated from each other, so that the electric field generated from the first electrode can induce a current.

Moreover, Applicant's claimed invention includes a second electrode that is made only of metal, and is not combined with semiconductor material stripes and side walls. And, in Applicant's claimed invention "current directly flows from the second electrode to the third electrode perpendicularly to the substrate and is modulated by an electric field generated from the first electrode parallel to the current."

Dodabalapur is relied on for teaching that electrodes can be made of metal. However, if Dodabalapur were combined with Hack, the resulting invention would still teach that current cannot flow directly from the second electrode to the third electrode because of the Schottky barrier in Hack. And, the design of Hack would be changed, resulting in disruption of the designed current flow. Therefore, it would not make sense to combine the features of Dodabalapur with those of Hack.

Moreover, according to MPEP 2142,

> [t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Applicant submits that without first reviewing Applicant's disclosure, no thought, whatsoever, would have been made to a structure where "a second electrode only made of metal and divided into a plurality of electrode portions, each electrode portion only made of metal; a semiconductor thin film; and a third electrode, wherein current directly flows from the second electrode to the third electrode perpendicularly to the substrate and is modulated by an electric field generated from the first electrode parallel to the current.

Therefore, even if Hack is combined with Dodabalapur, the resulting invention would still not teach, disclose or suggest all the limitations contained in Applicant's amended claim 1, as listed above. Since neither Hack, Dodabalapur, nor the combination of the two teach, disclose or suggest all the limitations of Applicant's claim 1, there would not be any motivation to arrive at Applicant's claimed invention. Thus,

Applicant's claim 1 is not obvious over Hack in view of Dodabalapur since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from claim 1, namely claims 2-7, would also not be obvious over Hack in view of Dodabalapur for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for claims 1-7 is respectfully requested.

B. It is asserted in the Office Action that claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hack, and further in view of Dodabalapur, and further in view of U. S. Patent No. 5,817,550 issued to Carey et al ("Carey").

Applicant's claim 4 directly depends on amended claim 1. Applicant has addressed Hack in view of Dodabalapur regarding amended claim 1 above in section I(A).

Carey is relied on solely for alternate substrate materials of "silicon or plastic." (Office Action, page 5). Like Hack and Dodabalapur, Carey does not teach, disclose or suggest "a second electrode only made of metal and divided into a plurality of electrode portions, each electrode portion only made of metal; a semiconductor thin film; and a third electrode, wherein current directly flows from the second electrode to the third electrode perpendicularly to the substrate and is modulated by an electric field generated from the first electrode parallel to the current."

Therefore, even if Hack and Dodabalapur are combined with Carey, the resulting invention would still not teach, disclose or suggest all the limitations contained in Applicant's amended claim 1, as listed above. Since neither Hack, Dodabalapur, Carey, nor the combination of the three teach, disclose or suggest all the limitations of Applicant's claim 1, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's claim 1 is not obvious over Hack in view of Dodabalapur and in further view of Carey since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends from claim 1, namely

claim 4, would also not be obvious over Hack in view of Dodabalapur and further in view of Carey for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for claim 4 is respectfully requested.

CONCLUSION

In view of the foregoing, it is submitted that claims 1-7 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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Dated: August 23, 2005

By: _____
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on August 23, 2005.

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Jean Svoboda